

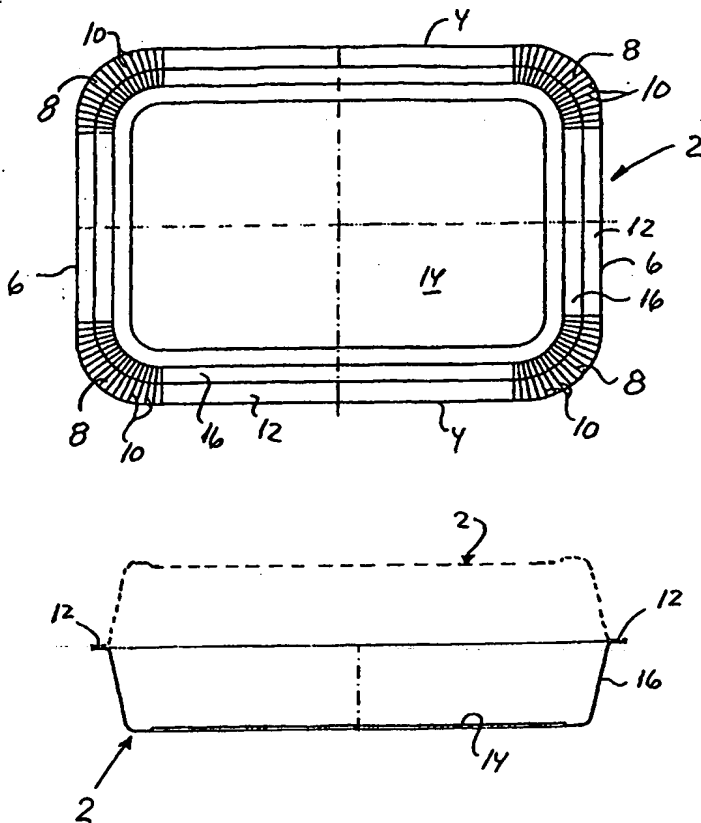


## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>7</sup> :</b> <b>B32B 29/00, B65D 77/20, 65/40</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 00/15431</b> <b>(43) International Publication Date:</b> 23 March 2000 (23.03.00)
<b>(21) International Application Number:</b> PCT/DK99/00488 <b>(22) International Filing Date:</b> 15 September 1999 (15.09.99) <b>(30) Priority Data:</b> PA 1998 01160 15 September 1998 (15.09.98) DK <b>(71)(72) Applicant and Inventor:</b> PEDERSEN, Steen [DK/DK]; Strandpromenaden 25, DK-6710 Esbjerg V (DK). <b>(74) Agent:</b> PATRADE A/S; Aaboulevarden 21, DK-8000 Aarhus C (DK).		<b>(81) Designated States:</b> AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), DM, EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT-LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.          Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.          In English translation (filed in Danish).</i>

**(54) Title:** PACKING TRAY AND METHOD FOR ITS PRODUCTION AND USE**(57) Abstract**

There is described a packing tray (2) mainly of cardboard, paper, or a laminate, e.g. extruded, primarily containing these materials and in particular intended as sales packing for foodstuffs, e.g. meat, sliced meat or vegetables, poultry, fish, fruit, vegetables, salads, pasta, dishes for dinner, bakery and dairy products, which tray preferably has a rectangular shape with rounded corner parts (8), a mainly plane bottom (14) and sloping side walls (16) which at the top continue in an annular edge (12) approximately extending in parallel with the bottom (14), which tray (2) consists of one moulded item, the upper side of which consists of a gas- and/or diffusion-proof coating having such barrier abilities that a covering film or a dome-shaped, e.g. transparent, lid (18) may be connected gas-proof or diffusion-proof to the said annular edge by welding. There is also described a method for making and using, respectively, the packing tray.



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## Packing Tray and Method for Its Production and Use

The present invention concerns a packing tray substantially of cardboard or, for example, an extruded laminate containing these materials, and of the kind indicated in the preamble of claim 1.

This kind of packing trays are used to a very large extent as sales packings for fresh foodstuffs of almost any kind, and most often the packing tray is provided with a simple wrapping of cheap plastic film. When speaking of meat, poultry, and fish, the shelf life of such fresh goods is only very short, and according to present practice and rules, the sales period for minced meat is only one or two days. The sales period for sliced meat and fish is also only very few days, which inter alia is contributing to that almost every supermarket necessarily must have its own butchering department which is often not profitable at all out of turnover considerations only.

On this background, the invention has the purpose of indicating an improved packing tray which may be a contributing factor for increasing, for example, the sales period for fresh foodstuffs, e.g. meat, sliced meat and vegetables, poultry, salads and fish, and which besides also may imply other advantages.

The packing tray according to the invention is characterised in that it consists of one moulded item, the upper side of which consisting of a gas- and/or diffusion-proof coating having such barrier abilities that a covering film or a dome-shaped, e.g. transparent, lid may be connected gas-proof or diffusion-proof to the said annular edge by welding. By means of simple measures there is hereby achieved a packing tray which is particularly suited for packing fresh foodstuffs, e.g. meat, sliced meat and vegetables, poultry and fish, fruit, vegetables, salads, pasta, dinner dishes, bakery and dairy products. The indicated packing tray also makes possible to perform the final top sealing of the packing tray and its content with simultaneous scavenging with a protective gas with the purpose of avoiding or reducing decomposition of the foodstuff,

so that the keeping quality and hence the sales period of the foodstuffs concerned may be prolonged considerably.

5 In that connection it should be mentioned that the said barrier qualities of the surface coating of the packing tray according to the invention together with the used film wrapping and/or the used lids correspond to a gas- and diffusion-proof barrier film with high barrier abilities or with low gas permeability. In practice, it is almost impossible to have a coating or a film wrapping being completely impermeable to diffusion of aqueous vapour. Besides, in connection with meat, there is no real risk in practice of drying up as fresh meat gives off humidity, but still it is of great significance to  
10 minimise diffusion of humidity out of the packing tray according to the invention.

The packing tray according to the invention is suitably designed so that said annular edge is designed with a number of bending lines at least opposite to the said rounded corner parts, and that the said coating has a certain minimum thickness. In a simple  
15 way it is hereby ensured that by the final top sealing, tightness is also achieved along edge parts of the rounded corner parts provided with bending lines that extend transversely to said edge parts. The very thick coating ensures, in other words, a smoothing of local unevennesses at said corner parts because of the transversely directed bending lines, i.e. the very thick coating at the subsequent top sealing of the packing tray also  
20 contributes to improve the welding and/or melting together at the corner parts.

Advantageously, the packing tray according to the invention may be thus designed that film wrapping is a so-called peelable film, i.e. a film which is particularly easy to  
25 remove from the annular edge of the packing tray.

With the purpose of making it very spacious, the packing tray according to the invention may advantageously be thus designed so that said dome-shaped lids are constituted by a correspondingly designed, inverted tray, which trays are welded together  
30 edge to edge. In other words, the total packing consists of two identically shaped packing trays which are welded gas-proof edge to edge.

The packing tray according to the invention may be thus designed as sales packing in an advantageous way so that tray, lid and possible paper laminated extruded film wrapping are provided with printing.

5 Furthermore, the invention concerns a method for making a packing tray according to claim 1 out of sheet- or roll-shaped material layer of a cardboard material, which is laminated, coated or provided with coating by extrusion, the surface coating of which material is weldable, which method is characterised in that blanks of material, the shape of which correspond to the packing tray, are punched out, that preferably before  
10 a number of bending lines are embossed at corner parts of the blanks of material, and that these thereafter are moulded by means of a moulding tool, preferably a heated moulding tool. Possible projecting material is cut off the annular edge of the finished packing trays.

15 The method according to the invention may advantageously be modified by using a material with a very thick surface coating which at the subsequent moulding by means of heat and/or friction ensures a smoothing and melting together of the bending lines at the corner parts of the annular edge at least.

20 The invention also concerns a method for using a packing tray according to claim 1, for example as sales packing for foodstuffs, where one or more food item, e.g. a recently slaughtered chicken, is placed on the tray, the method being characterised in that the foodstuffs are covered by a weldable, gas-proof film which is welded to the annular edge of the packing tray, preferably with simultaneous scavenging with a  
25 protective gas.

An alternative method for using a packing tray according to claim 1, for example as sales packing for foodstuffs, where one or more food items, e.g. a portion of minced  
30 flesh or meat, is placed on the tray, characterised in that the foodstuffs are covered by means of a dome-shaped, transparent plastic lid which is welded to the annular edge of the packing tray, preferably with simultaneous scavenging with a protective gas.

A further alternative method for using a packing tray according to claim 1, for example as sales packing for foodstuffs, e.g. prepared dinner dishes, where a portion of foodstuffs are placed on the tray, characterised in that the foodstuffs are covered by means of a dome-shaped lid consisting of a correspondingly shaped, inverted tray, and  
5 that the trays are welded together at the annular edge, preferably with simultaneous scavenging with a protective gas.

The invention is explained in more detail in the following with the drawing, on which:

- 10 Fig. 1 shows a top view of an embodiment of a packing according to the invention,  
Fig. 2 shows a longitudinal section of the packing tray shown in Fig. 1, and  
Fig. 3 shows a transverse section of the packing tray shown in Fig. 1.

The shown packing tray 2 has a shape known per se as the it is mainly rectangular  
15 with mutually parallel longitudinal sides 4 and short sides 6 and with rounded corner parts 8, each being designed with a large number of bending lines 10. These bending lines 10 at the corner parts 8 also extends over an annular, outward bent edge 12 which is substantially in parallel with a plane bottom 14. A slightly outward/upward sloping side wall 16 extends between this and the annular edge 12. The bending lines 10 at the  
20 corner parts 8 have the purpose of making easier to mould the packing tray 2 out of a previously punched plane blank of material without any breakage occurring in the blank which may be punched out from a sheet or roll shaped layer of material.

The packing tray 2 is made of cardboard, or preferably a laminate containing cardboard. The packing tray 2 is developed particularly for use for fresh foodstuffs, e.g.  
25 meat, sliced meat or vegetables, poultry, fish, fruit, vegetables, salads, pasta, dinner dishes, bakery and dairy products, and there is preferably used a laminated material where the core material substantially consists of cardboard that either by coating or extrusion is provided with a suitable surface coating which at the side coming into  
30 contact with the foodstuff consists of a gas-proof, weldable coating. The external side or the underside of the packing tray or the material layer may possibly be impregnated in order to make the external side or the underside less absorbing.

By means of the upper weldable coating of the tray 2, it becomes very easy to seal of the packing tray 2 at the top - when the foodstuff has been placed on this - by means of a gas-proof, weldable plastic film extending over the foodstuff, e.g. a chicken, and which is welded to the annular edge 12 while scavenging with a protective gas, so that an efficiently sealed and presentable sales packing with exceptionally long keeping qualities (shelf life) is formed.

The welding together may take place by means of a welding tool with a welding sole with a protruding edge so that welding together only takes place along the edge, or there may be used a plane welding plate. In order to ensure that welding is made correctly and gas-proof also at the corner parts 8 with the bending lines 10, welding soles or welding plates with mutually co-operating projecting edges, grooves or lamellae may be used.

In Fig. 2 showing a longitudinal section through the packing tray 2, there is furthermore shown with stippled line that two identically shaped packing trays 2 welded together edge to edge may form a packing with a relatively large capacity.

In Fig. 3 showing a cross section through the packing tray 2, there is furthermore shown with stippled line that the packing tray 2 may be provided with a preferably rigidly dome-shaped lid 18 which, for example, may be transparent and printed.

The surface coating of the packing tray may advantageously consist of several layers, namely a lower hard cardboard layer and an upper soft weld layer which during the moulding process melts together by means of heat or friction so that also the bending lines in the corner areas are smoothed out with certainty and welded together in a gas-proof way.

For use as packing for prepared dinner dishes and other foodstuffs like pizzas and other dough items which are often cooked in a microwave oven, it may be suitable that at least the side of the cardboard or paper material constituting the inner side of the

packing tray is coated with a susceptor coating consisting of a hard plastic layer, e.g. PET or PEN, toward the cardboard or paper material, and which at the opposite side consist of a soft weld coating. Thereby it is possible to achieve longer shelf life and at the same time a faster and more even baking in the microwave oven. It may also be advantageous that the lid at the inner side is provided with a susceptor coating.

It should be mentioned that it is within the scope of the invention to design the packing tray with any other form than the described substantially rectangular shape. For example, the packing tray according to the invention could be designed with substantially circular or substantially elliptical shape. A possible alternative form of the packing tray according to the invention could be designing the tray with several compartments which even could be arranged to be individually sealed with one of the said coverings, possibly including scavenging with protective gas during the sealing procedure.



## CLAIMS

1. A packing tray (2) substantially of cardboard, paper, or a laminate made, for example, by extrusion and based on cardboard or paper and in particular intended as sales  
5 packing for foodstuffs, e.g. meat, sliced meat or vegetables, poultry, fish, fruit, vegetables, pasta, salads, dishes for dinner, bakery and dairy products, which tray preferably has a rectangular shape with rounded corner parts (8), a mainly plane bottom (14) and sloping side walls (16) which at the top continue in an annular edge (12) approximately extending in parallel with the bottom (14), characterised in that the  
10 tray (2) consists of one moulded item, the upper side of which consist of a gas- and/or diffusion-proof coating having such barrier abilities that a covering film or a dome-shaped, e.g. transparent, lid (18) may be connected gas-proof or diffusion-proof to the said annular edge by welding.
- 15 2. A packing tray (2) according to claim 1, characterised in that the said annular edge (12) is designed with a number of bending lines (10) at least opposite to the said rounded corner parts (8), and that the said coating has a certain minimum thickness.
- 20 3. A packing tray (2) according to claim 1, characterised in that the said film wrapping is a so-called peelable foil, i.e. a foil which is exceptionally easy to remove from the annular edge (12) of the packing tray.
4. A packing tray (2) according to claim 1, characterised in that the said  
25 dome-shaped lid is constituted by a correspondingly designed, inverted tray (2), which trays are welded together edge to edge.
5. A packing tray according to claim 1 - 4, characterised in that tray (2), lid (18) and possible paper laminated extruded film wrapping is provided with print.
- 30 6. A method for making a packing tray according to claim 1 out of sheet- or roll-shaped material layer of a cardboard material, which is laminated, coated or provided

with coating by extrusion, the surface coating of which material is weldable, characterised in that blanks of material, the shape of which correspond to the packing tray, are punched out, that preferably at the same time a number of bending lines are embossed at corner parts of the blanks of material, and that these thereafter  
5 are moulded by means of a moulding tool, preferably a heated moulding tool.

7. A method according to claim 5, characterised in that there is used a material with an exceptionally thick surface coating which at the subsequent moulding by means of heat and friction ensures a smoothing and melting together of the bending  
10 lines at the corner parts of the annular edge at least.

8. A method for using a packing tray according to claim 1, for example as sales packing for foodstuffs, where one or more food item, e.g. a recently slaughtered chicken, is placed on the tray, characterised in that the foodstuffs are covered by a weld-  
15 able, gas-proof film which is welded to the annular edge of the packing tray, preferably with simultaneous scavenging with a protective gas.

9. A method for using a packing tray according to claim 1, for example a sales packing for foodstuffs, where one or more food items, e.g. a portion of minced flesh or meat, is placed on the tray, characterised in that the foodstuffs are covered by means  
20 of a dome-shaped, transparent plastic lid which is welded to the annular edge of the packing tray, preferably with simultaneous scavenging with a protective gas.

10. A method for using a packing tray according to claim 1, for example as sales  
25 packing for foodstuffs, e.g. prepared dinner dishes, where a portion of foodstuffs are placed on the tray, characterised in that the foodstuffs are covered by means of a dome-shaped lid consisting of a correspondingly shaped, inverted tray, and that the trays are welded together at the annular edge, preferably with simultaneous scavenging with a protective gas.

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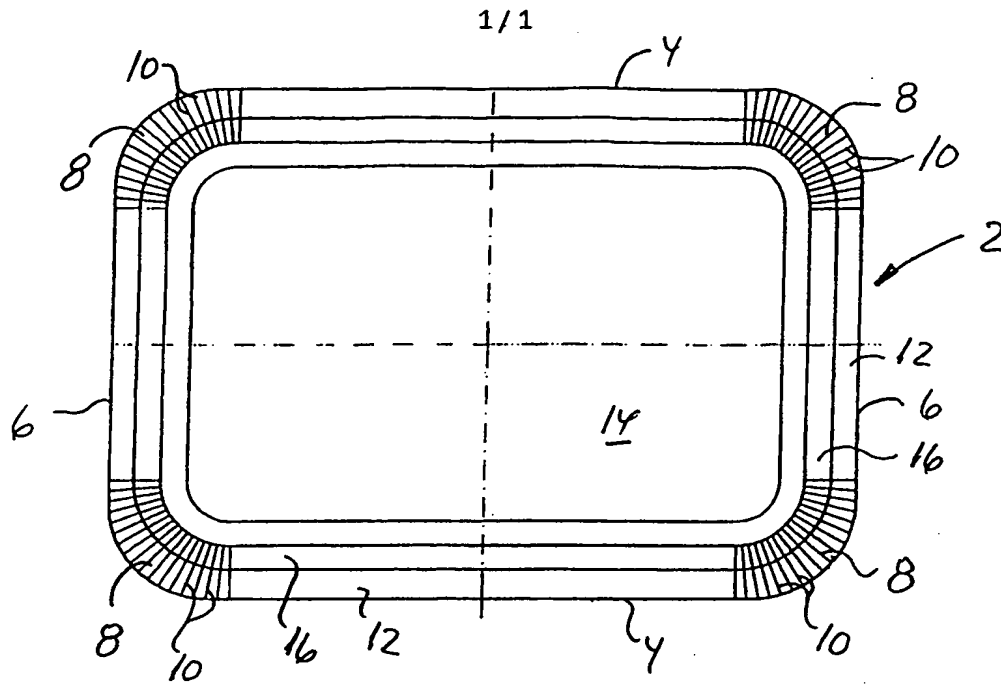


Fig. 1

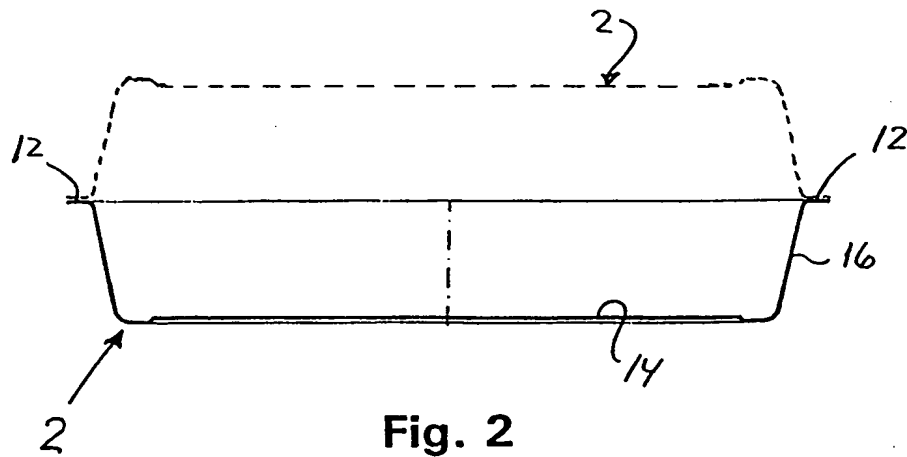


Fig. 2

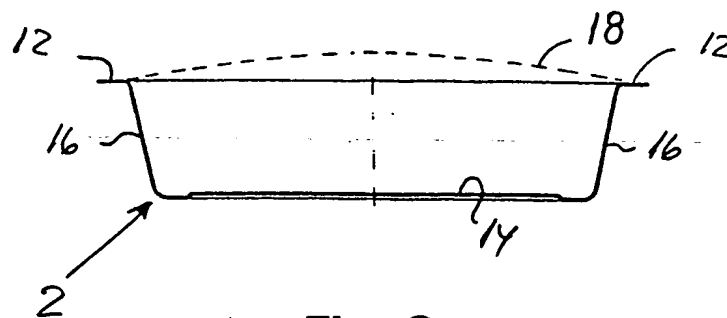


Fig. 3

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 99/00488

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: B32B 29/00, B65D 77/20, B65D 65/40  
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Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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## C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	WO 9801363 A1 (W.R. GRACE & CO. - CONN.), 15 January 1998 (15.01.98) --	1,3,6-10
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Date of the actual completion of the international search

19 January 2000

Date of mailing of the international search report

28 January 2000 (28.01.00)

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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